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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

March 12, 2007

OK

TO: Internal File

THRU: Wayne H. Western, Environmental Scientist III *WHW*

FROM: *Σ* Priscilla Burton, CPSSc, Environmental Scientist III *PWB by an*
Steve Christensen, Environmental Scientist II

RE: 1st North Federal Lease Boundary Addition, CONSOL Energy Company, Emery Deep Mine, C0150015, Task ID # 2761 Alluvial Valley Floor Analysis

SUMMARY:

Responses to the review of task 2646 were received on February 14, 2007. Task 2646, an amendment to include full extraction within the federal Incidental Boundary Change (IBC) was received on December 15, 2006. A flurry of emails and telephone calls followed to discuss the definition of permit area and how it applied to the Prime Farmland and Alluvial Valley Floor requirements for permitting. A revision to the application was received on February 14, 2007 (reviewed as Task 2749). This review is of those responses, which have been previously agreed upon by all parties.

The Division found the information for Task 2749 deficient and the Permittee submitted additional information under Task 2761.

The current Incidental Boundary Change (IBC) area encompasses approximately 160 acres of federal coal lease U50044 located on privately held surface (D.U. Company) in the Sec. 22, T. 22 S., R. 6 E., SLBM: SW/4NW/4, NW/4SW/4, NE/4SW1/4, and SE/4SE/4.

The First North IBC lies to the east of Christiansen Wash and to the west of the Muddy Creek drainage. (Chapter VIII). Christiansen Wash flows through the northeast portion of the permit area and meets Quitcupah Creek at the mine facilities area. In the 1985 Technical Analysis, the Division determined that Christiansen Wash is not an alluvial valley floor, mainly because the source of irrigation water is brought to Christiansen Wash from the adjacent Muddy Creek drainage. The Muddy Creek drainage is an Alluvial Valley Floor (MRP Chapter XI). The source of water for irrigation is indicated on Plate V-3 as 20 miles upstream of the proposed permit area. The acres of land under irrigation vary annually.

[Note: A previous IBC in April 2005 added 348 acres to the northeast of the permit area in T. 22 S., R. 6 E., SLBM as follows: Sec 22: NE1/4, SE1/4, SE1/4NW1/4 (19 acres owned by Christiansen), Sec 23: W1/2 SW1/4, Sec 27: NE/4.]

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TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial Valley Floor Determination

The existence of an alluvial valley floor with irrigated pastures and areas of sub-irrigation along the upper Quitchupah Creek Valley was previously established by the Division (February 25, 1985 Technical Analysis of the Emery Deep Mine, ACT/015/015), and described in the MRP Chapter XI.B.5 and Plate XI-1. The upper reaches of Christiansen Wash contributing to the AVF will be undermined with planned subsidence as described in the MRP, Chapter XI.B.5 and Plate V-5.

Christiansen Wash flows through the northeast portion of the permit area and meets Quitchupah Creek at the mine facilities area. In the 1985 Technical Analysis, the Division previously determined that Christiansen Wash is not an alluvial valley floor, mainly because the source of irrigation water is brought to Christiansen Wash from the adjacent Muddy Creek drainage. The negative AVF determination for Christiansen Wash is discussed in Chapter XI.B.3 of the MRP

The fee and federal leases of the First North IBC lie between Christiansen Wash and Muddy Creek. (Chapter VIII). Plate 1 in App. XI indicates the area geology is alluvial deposits that are flood irrigated, specially managed land. More recently, Plates VI-6 and VIII-1 indicate the current land use of irrigated pasture. The Farm Service Agency has a record of approximately 48 acres under irrigation within the IBC. As noted in the MRP, the acreage of irrigation may change annually. The irrigation system is shown on Plate V-3. The source of diversion for water in the irrigation ditches is 20 miles upstream, northwest of the permit area.

Plate 1-1 shows that the land surface within the federal lease portion of the First North IBC is entirely owned by D.U. Company, Inc. [The D.U. Co. land is leased and irrigated, according to Muddy Creek Irrigation Co. representative Morris Sorenson.] Productivity of the D.U.P. land was estimated by the NRCS in their February 26, 2007 prime farmland determination letter as follows:

There are two soil survey mapping units that have been designated as prime farmland ONLY WHEN THEY ARE IRRIGATED. Using the map symbols from your attached map they are PnA--Penoyer loam, 0 to 1 percent slopes and RIB--Ravola loam, 1 to 3 percent slopes.

The estimated yields under irrigation for the Penoyer soil with a high level of management are: alfalfa = 5 tons, barley = 75 bushels, oats = 70 to 75 bushels and pasture 10 AUMs.

The estimated yields under irrigation for the Ravola soil with a high level of management are: alfalfa = 6 tons, barley = 100 bushels, oats = 70 bushels and pasture = 13 AUMs.

The yields values are taken from the SOIL SURVEY Carbon-Emery Area, UT, issued December, 1970.

Consol declined to evaluate current prime farmland or productivity, arguing in email correspondence that these resource values were not relevant, since the only impact will be subsidence in the First North IBC (February 27, 2007, John Gefferth to Mary Ann Wright). Consol owns the majority of the fee land in the First North IBC, with the remainder owned by Kenneth L. and Earlene Christiansen. The Consol land is leased and irrigated. MRP Section XIII.C.2 and the Prime Farmland determination letter in App. XII-1 and the NRCS correspondence in the 2007 Incoming folder provide information on irrigated pasture yields.

The historical piezometric surface for the upper ferron sandstone and lower ferron sandstone aquifers are depicted on Plates VI-4 through VI-9. In the vicinity of the 1st North IBC, the potentiometric surface of the Lower Ferron Aquifer was 35 to 38 ft. below the surface in 1990. The Upper Ferron Aquifer was approximately 90 ft below the surface in 1995.

Protection of Agricultural Activities

Three areas are illustrated on Plate XI-1, of which Area 1 is grandfathered and not subject to the AVF rules. A buffer zone has been established around Areas 2 and 3 to protect these areas from subsidence (Chap. V and Plate V-5). Subsidence is not anticipated in these areas, but a restoration plan for Areas 2 and 3 is described in Appendix XI-3.

Soil Resources for the First North IBC are described in Section XIII.C.2. The soil types shown on Figure XIII-1a indicate that there are potentially 50 acres of prime farmlands, if irrigated. Irrigation varies from year to year. Plates VI-6 and VIII-1 indicate the 2006 land use. The Farm Service Agency has a record of approximately 48 acres under irrigation. According to

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Mr. Roger Barton and Jim Greenan of the Utah Association of Conservation Districts and Morris Sorenson of the Muddy Creek Irrigation Company, approximately 300 acres on either side of the Muddy Creek irrigation ditch is irrigated (personal conversation 12/12/06).

Monitoring

MRP App. XI-2 Section 2.3.4 contains monitoring commitments for the ditch and water supply to the Jack Lewis field during operations and a topographic survey of the AVF in the upper Quitcupah Creek valley bottom prior to bond release. Pre-subsidence monitoring of pond embankments and irrigation ditch elevations and gradients is described for lands within the angle of draw in T. 22 S., R. 6 E., SLBM by D.U. Company and Kenneth L. & Earlene Christiansen (Chap. V, pp. 36, 37, 41, 42).

Findings:

The Division finds that Christiansen Wash is an area of irrigated pastureland dependent upon an external source of water, that being Muddy Creek, upstream of the permit area. Christiansen Wash is not, therefore, an alluvial valley floor, but Muddy Creek is an alluvial valley floor.

RECOMMENDATIONS:

The application is recommended for approval.

The Muddy Creek drainage is an Alluvial Valley Floor (MRP Chapter XI) and that is reflected in the Emery Mine Probable Hydrologic Consequences (PHC) document and Cumulative Hydrologic Impact Assessment (CHIA), but should also be reflected in the SUFCO mine plan PHC and the Division's SUFCO CHIA.